TIGGER Transit Investments for Greenhouse Gas and Energy Reduction

U.S. Department of Transportation
Federal Transit Administration


NREL PIX 08866

Project name: Hale Street Photovoltaic System

Transit agency: Lowell Regional Transit Authority

Location: Lowell, Massachusetts

TIGGER goal: Energy and GHG emissions reduction

FTA region number: I

Award amount: $1,500,000

Congressional district: MA-5

Funding mechanism: Recovery Act (ARRA)

Lowell Regional Transit Authority Taps into Energy from the Sun

Lowell Regional Transit Authority (LRTA) recently installed the largest photovoltaic system at any public transit agency in Massachusetts thanks to funding from the TIGGER Program along with state financial incentives from the Massachusetts Technology Collaborative.

Solar Project

Comprising 1,911 solar panels with a peak rating of 250 Watts each, the system has a total capacity of 477,750 DC-Watts, which converts to 489,700 kWh/year of AC power. The photovoltaic system will meet 99.9% of the facility's electricity requirements, nearly eliminating LRTA's consumption of on-site electricity from the grid. By displacing grid electricity, much of which is produced from fossil fuels, with electricity produced from solar energy, LRTA is reducing greenhouse gas emissions and its carbon footprint.

LRTA installed the system on the roof of its Hale Street garage facility, which the transit agency uses for administrative and dispatch services as well as for

Lowell Regional Transit Authority provides public transportation services within its 13 member communities—Lowell, Acton, Billerica, Chelmsford, Dracut, Dunstable, Groton, Maynard, Pepperell, Tewksbury, Tyngsboro, Townsend, and Westford. It offers fixed-route bus service to six communities, demand-response service for elderly and disabled persons to ten communities, special minibus service to six regional councils on aging, and shuttle service for twelve business and tourist sites in the City of Lowell. LRTA also supports the Massachusetts Bay Transportation Authority's commuter rail system, which operates 42 Amtrak commuter trains a day between Lowell and Boston's North Station.

storing, fueling, maintaining, and repairing vehicles (such as buses, vans, and tow trucks). The 70,000 square foot building, located in an industrial zone in Lowell, Massachusetts, was originally designed as a manufacturing facility. LRTA purchased, upgraded, and converted the building for use as a transit agency facility.

This building is well-suited for such a PV installation for the following reasons:

- The 38,000 ft^2 roof is essentially flat and has few superstructures
- A wide perimeter of land around the building lacks structures or trees to block sunlight
- All of the electric output can be used by the facility
- The property is owned by LRTA.

The LRTA installation provides an excellent example for other transit agencies considering the addition of renewable technologies at their sites.

Impact:

The photovoltaic system is expected to meet 99.9% of the Hale Street facility's electricity requirements; by displacing this grid electricity, much of which is produced from fossil fuels, with electricity from solar energy, LRTA is reducing its carbon footprint.

The primary tasks and materials involved in this installation are highlighted below:

1. Selection and purchase of solar panels manufactured by American Choice and associated hardware and equipment from Solectra
2. Demolition of existing roof structure and replacement with a new roof structure capable of supporting the selected photovoltaic system
3. Installation of racking to secure the panels to the roof structure
4. Installation of inverters for DC to AC conversion and wiring
5. Installation labor
6. Engineering, permit work, site preparation, and project management.

The total project cost to replace the roof structure, acquire and install the panels, connect power to the electrical grid, and build out a ready-to-use installation was $3.79 million. This work was performed by Ostrow Electric Company, electrical contractor; Colantonio Inc., general contractor; and Solar Design Associates and Simpson, Gumpertz, and Heger, engineering support.

About TIGGER

The Transit Investment for Greenhouse Gas and Energy Reduction (TIGGER) Program *was established in 2009 by the U.S. Department of Transportation's Federal Transit Administration (FTA). Designed to reduce energy use and greenhouse gas emissions in transit agencies around the country, the TIGGER Program made funds available for capital investments that would reduce greenhouse gas emissions or lower the energy use of public transportation systems. An initial $100 million in American Recovery and Reinvestment Act grants funded 43 competitively-selected transit projects. In 2010, the FTA provided an additional $75 million in grants to fund 27 new TIGGER projects. These 70 projects are employing a variety of technologies to meet the program goals, including solar installations, building efficiency improvements, wind technology, wayside energy storage for rail, and purchase of more efficient buses. In fiscal year 2011, FTA provided an additional $49.9 million to continue the program.*

For More Information

Lowell Regional Transit Authority:
http://lrta.com

FTA TIGGER:
www.fta.dot.gov/TIGGER

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